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TITLE: Location Based Services

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ABSTRACT

Location based Services denote Services provided to Mobile Users according to their geographic Locations. Each User wants to get the service according to his/her own interest. This proposal described the various Applications of Location based Services with their Strengths and Weakness. Some data from various services have been collected shown in table 1, 2 and 3. But the results only provides the location detection of the broad area of mobile user by mobile operators, also the other applications described in state of art does not gives the accurate results for indoor positioning and does not included the time frame for displaying the results. Comparing the results of various applications in state of art, they do not cover some of the requirements of user which this proposed System will try to refine. The proposal will design and develop an algorithm for location tracking to find the exact location of user in particular time frame (threshold vale does not exceed 2 minutes) at different locations. There is no constraint of indoor and outdoor. The proposed algorithm will be developed for Android Client using Android Location API and Google map API.The Localized engine will be designed in order to solve the problem. We will also include different Software's according to the need, after that the system will go to various validation checks for its accuracy and reliability, So that the system should meet all the requirements of user with a significant value.

Keywords: Global Positioning System, Location Tracking, Google Maps, Global System for Mobile Communication, Android

Table of Contents

Sno.	Description	Page no.
1	**Introduction**	4
2	**Literature Survey**	4-5
3	**Description of Broad Area/Topic** **3.1 Location based Services** **3.2 Google Maps**	5-7
4	**Objective of study/Problem Identification**	7
5	**Methodology to be adopted**	8
6	**Proposed/expected outcome of the Research**	8-10
7	**References**	10-11

1. Introduction

Location is essential to how people relate and organize their world. Today Mobile Phones are affordable to nearly everyone. Today Mobile communication devices have become technologically advance and provide multiple features such as voice conversation, video chats, SMS, internet usage and tracking system. For example, if a User is waiting for a driver, the driver rings and says he is busy in Delhi and will come after one hour, at this time the Location detection of the driver is very valuable to User to check whether the driver words are true or he is making fool of User. Also knowing that you are 3 KM from University is good but to obtain a travel path to the university considered as value. Retrieving information about restaurants and cafes along the path would enhance the value better. Moreover, knowing the geographical location of a person or object at any time would add a new powerful dimension to Information Services.

2. Literature Review

Various Researchers had described the work on various applications on location based services**. Jinsoo Ahn et al [11]** proposed a **remote patient management system** based on location information service with the Biometric data of patient. The purpose of this service is that the patients who meets emergency situation have proper first aid treatments from emergency Institutions by checking patient location and current conditions. In conventional circumstance, the patient lives with a sensor and the Information is transmitted to Local place through wireless LAN, CDMA and cellular modems. The Limitation of this system is that it uses Assisted GPS and we need additional mobile with built-in GPS Chip. **Ma chang-jie and fang Jin-Yun [8]** Proposed LBS based **Mobile Tour Guide system** which provides MTG services based on Location awareness. It facilitates the Users to make full use and enjoyment of MTG services at any time, anywhere through Mobile devices. The System is designed for Personal journey trips about dunhang tied to each tourist such as whether reports, journey schedules advice on departure fee, shopping, nearest areas and so on. But it has a limitation that the system has distinct regional property i.e. it is a successful application in one tourism region but not appropriate for others. **M.J Callaghan et al [12**] proposed an **Internal Location tracking system** based on Integration of RFID, Wireless Sensor Networks and Wi-

Fi that can accurately track users in an environment and subsequently present the user with context aware location specific information. The architecture developed is flexible and could be deployed in a range of application domains including Tourism and Inventory Tracking. Its limitation is that the system is slow, it needs to be improved and there is need of accuracy for Indoor positioning. **Gregory d Adowd et al [9]** proposed a **mobile context aware tour guide** for tourism as tourist are usually quite to carry around a book that describes the location they are visiting, so a reasonable packaging in the form of Mobile device. This application built to support users through various venus.This application has limitation that it is only used for outdoor positioning as GPS is unreliable for Indoor positioning. **R.A Abbaspour and F.Samadzadegan [2]** proposed a **Personal Tourist Guide System** based on service oriented architecture.PTG sends a request based on context of user to a catalogue. Here the tourist may be assumed as mobile and moving object.PTG system assists the tourist both in preparatory phase and during a trip. But in this system user encountered various problems like network connection with low bandwidth, low quality of information provided to user therefore the users have to search the service providers to find their service.

In the work of above cited authors, there are different areas where the location of a Mobile users were detected but in a specific area for some specific purpose. All those are used for specific applications such as Mobile tour Guide which is designed for world famous cultural heritage Dunhuag but this application is not used in other areas. Galileo is designed for Patient Management System in China. Other applications have limitations that they are successful for outdoor Positioning and not for Indoor positioning. Secondly no specific time frame is used for the applications. The aim of our research shall be to design an algorithm and to implement it on software in which we shall restrict our area of location, taking time frame into account and to extract results for both Indoor and Outdoor Positioning.

3. Description of Broad Area

3.1 Location based Services

Definition 1: A **location-based service** (LBS) is an information and entertainment service, accessible with mobile devices through the mobile network and utilizing the ability to make use of the geographical position of the mobile device [7].

Definition 2: Location-Based Services refers to a broad range of services that are based on (or enhanced by) information about the physical location of a user and/or device [6].

The first commercial LBS service in Japan was launched by DoCoMo, based on triangulation for pre-GPS handsets in July 2001, and by KDDI for the first mobile phones equipped with GPS in December 2001[13]. Mobile handset makers have tended to take 'upstream initiative' to embed LBS in their mobile equipment. Originally, LBS was developed by mobile carriers in partnership with mobile content providers. In May, 2002, go2 and AT&T launched the first mobile LBS local search application that used Automatic Location Identification (ALI) technologies mandated by the FCC. go2 users were able to use AT&T's ALI to determine their location and search near that location to obtain a list of requested locations (stores, restaurants, etc.) ranked by proximity to the ALI provide by the AT&T wireless network. The ALI determined location was also used as a starting point for turn-by-turn directions. In 2010, location-based services power, GPS assists pilots and drivers in pinpointing their locations and avoiding collisions. Farmers can use GPS to guide equipment and control accurate distribution of fertilizers and other chemicals. Recreationally, GPS is used for providing accurate locations and as a navigation tool for hikers, hunters and boaters.

3.2 Google Maps

Google Map is a web mapping service application and technology provided by Google, free (for non-commercial use), that powers many map-based services, including the Google Maps website, Google Ride Finder, Google Transit, and maps embedded on third-party websites via the Google Maps API[3]. It offers street maps, for traveling by foot, car, or public transport and an urban business locator for numerous countries around the world. According to one of its creators Google Maps is "a way of organizing the world's information geographically". Google Maps first started as a software application developed by Lars and Jens Rasmussen for the company Where2. In October 2004 the company was acquired by Google Inc. where it transformed into the web application Google Maps.

The application was first announced on the Google Blog on February 8, 2005 and was located at Google. It originally only supported users of Internet Explorer and Mozilla browsers, but

support for Opera and Safari was added on February 25, 2005, but currently Opera is removed from the system requirements list. Currently (September 2009) Internet Explorer 6.0+, Firefox 2.0+ and Google Chrome are supported. In April 2005, Google created Google Ride Finder using Google Maps. In July 2005, Google began Google Maps and Google Local services for Japan, including road maps. On July 22, 2005, Google released "Hybrid View". Together with this change, the satellite image data was converted from plate carrée to Mercator projection, which makes for a less distorted image in the temperate climes latitudes. Google Moon was launched. In September 2005.As of January 2, 2006, Google Maps featured road maps for the United States. On January 23, 2006, Google Maps was updated to use the same satellite image database as Google Earth.

On March 12, 2006, Google Mars was launched, which features a draggable map and satellite imagery of the planet Mars. In May, 2009, a new Google Maps logo was introduced. In early October 2009, Google replaces TeleAtlas as their primary supplier of geospatial data in the U.S. version of Maps and use their own data. In October 2009, the railroads were redone, featuring a slightly new look and updated, removing older lines Also in the same month, maps in several areas were changed to include paper streets and other odd roads that don't exist, as well as lot lines showing up on the map interface. On February 11, 2010, Google Maps Labs was added. On March 11, 2010, Street View in the United Kingdom, Hong Kong, Macau, and more locations in Japan were launched. On May 25, 2010, public transportation routing for Denmark was added. Figure 2 shows the path shown on Google map.

4. Objective of our Study/Problem statement

The objective of our study is to develop a Microaddress Recorder Application in order to get the exact location of mobile user with the distances from different and nearby places. The application will work for both indoor and outdoor and tries to get the Locations on the Map.

Problem Statement: In the recent studies, the results were not related to a limited time frame and secondly in those results we are showing the broad area and not the exact location where the user is in different time frames.

5. Methodology

The proposed architecture will be implemented on Android 4.0 version Mobile phone. It is an Integration of Web based and Reverse Geocoding with Google Maps. The main engine prepared will be Localized Location Engine. The Programming will be done in JAVA and Scriping Language JavaScript is used. It will also use various API's according to the requirement.

6. Proposed Work/Expected Outcome of Research

We plan our work on Location based Services.A **location-based service** (LBS) is a service for seeking people or things location through Mobile devices based on Wireless Communication Network and uses the Information Equivalently, we may define Location-Based Service as a service which allow user being able to receive their physical location and position and existence The first commercial LBS service in Japan was launched by DoCoMo, based on triangulation_for pre-GPS handsets in July 2001, and by KDDI for the first mobile phones equipped with GPS in December 2001[13]. Mobile handset makers have tended to take 'upstream initiative' to embed LBS in their mobile equipment. Originally, LBS was developed by mobile carriers in partnership with mobile content providers. In May, 2002, go2 and AT&T launched the first mobile LBS local search application that used Automatic Location Identification (ALI) technologies mandated by the FCC. go2 users were able to use AT&T's ALI to determine their location and search near that location to obtain a list of requested locations (stores, restaurants, etc.) ranked by proximity to the ALI provide by the AT&T wireless network. The ALI determined location was also used as a starting point for turn-by-turn directions.

User Location is an important dimension in this new data service world -"it has the potential to make mobile services more relevant to Users as Information is adjusted to the context". The Information and knowledge presented to users should be tailored according to their context, being its personal or environmental. There are various applications where Location based services are used such as Mobile Guides, Transport LBS including Driver assistance, Passenger Information, Location gaming, Location based Health etc.The architectures for Mobile applications development begin to gain penetration across discipline and territories.

Location based applications and services will get increasingly important for Mobile Users of Future [10].They take into account Mobile Users current Location and provide Location dependent output .Often Location based applications have to deal with raw location data of specific positioning system (e.g. GPS) and perform future processing to get appropriate representation. Most of the Applications use Satellite Navigation System (GPS) to determine current Location. As GPS receivers are inexpensive and corresponding Location is accurate therefore GPS is widely accepted.

Now our Study goes to the new directions of Location Detection of Mobile User. For this purpose we had collected some data from various web free services as shown below.

BhartiyaMobile.com Ref: [4]

Sno	Phone	Location	Operator	Signal
1	9911527404	Delhi	Idea	GSM
2	9315467099	Haryana	Reliance	CDMA
3	7838383420	Delhi	Vodaphone	GSM
4	9463289996	Punjab	BSNL	CDMA
5	9315467099	Haryana	Reliance	CDMA

Table no. 1: Data Collection using Service BhartiyaMobile.com

Mobile Number Tracker Ref: [5]

Sno	Phone	Location	Service Provider
1	8800566005	Delhi Metro Telecom circle[includes NCR,Faridabad,Ghaziabad,Gurgaon and Noida]	Airtel
2	9911527404	Delhi Metro Telecom circle[includes NCR,Faridabad,Ghaziabad,Gurgaon and Noida]	Idea Cellular
3	9355234700	Haryana Telecom Circle[excludes Faridabad,Gurgaon & punchkula]	Reliance CDMA
4	9560299815	Delhi Metro Telecom circle[includes NCR,Faridabad,Ghaziabad,Gurgaon and Noida]	Airtel
5	9810624564	Delhi Metro Telecom circle[includes NCR,Faridabad,Ghaziabad,Gurgaon and Noida]	Airtel

Table no. 2: Data Collection using Service Mobile Number Tracker

The Tested data is shown in Table 1 and 2 for two free services These Services provide the Information related to the Broad area of Location detection by Mobile Operators**.**

The above data does not provide the appropriate result. This is an example for the requirement of the proposal, if a mobile User is in Ambala, an application shows ambala on the map, after some time mobile user moves to Kurukshetra, an application Shows kurukshetra on the map. Secondly max threshold value for time is 2 minutes.The proposed system will be used for Naïve user. Secondly the System is free of service so that it will meet the requirement of each and every user, also there is no limitation of indoor and outdoor positioning of user.

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